ENVIRONMENTAL PHYSICS GROUP

NEWSLETTER NO 4

OCTOBER 1992

THE INSTITUTE OF PHYSICS

COMMITTEE NEWS

The first Annual General Meeting of the Environmental Physics Group was held at 47 Belgrave Square in May. Dr Peirson, outgoing Group Chairman reported on the last year, and paid tribute to those who had done so much to get the EPG up and running in its first two years, in particular Dr Alastair McCartney, the Honorary Secretary. Membership stood at over 260 and interest both inside and outside the IOP remains high. Dr Peirson commented on the good work done by the Education SubCommittee under the direction of Peter Hughes. He noted the Committee's concern to pass on the environmental message to students and mentioned that it was considering the practicablility of (a) concessionary registrationa fees for meetings and (b) visits to Physics Societies at hihger education institutes, perhaps in conjuction with the local branch.

Elections were held for the EPG's Steering Committee: Professor Mike Unsworth (University of Nottingham) took over the Chair, Dr McCartney remained as Hon. Secretary and Dr Peirson agreed to continue helping the Committee by serving as Deputy Chair. Several committee members resigned and a number of new recruits have joined, a full list of which is given earlier. Brief biographies of those joining the committe are included later in this issue.

Having thanked Dr Peirson for his invaluable leadership, Professor Unsworth introduced the evening's invited speaker: Sir John Mason. The audience was then treated to a most authoritative overview on the subject of ***The Greenhouse Effect and Global Warning***.

The Steering Committee has met on 30 January, 1 June and 1 September.

At the June meeting it was decided that the EPG should continue in membership of the Engineering Physics Division, with Dr Peirson acting as representative, and Dr Youngs as backup.

The Steering Committee would very much like to hear from ***YOU*** if you have an idea for a meeting. This can be a full or half-day one, or an evening one, it can take place at any suitable location in the UK, and it can be a joint one with other appropriate societies or groups. In particular, the Committee would like to hear from you if you would like to organise such a meeting, or if you would like to offer yourself as a speaker for an evening meeting. Evening meetings are especially appropriate to hold with the IOP Branch in the area. This provides them with a stimulating evening and allows the EPG to reach further than its own membership.

Anyone with ideas, should first contact the Honorary Secretary, Alastair McCartney at the address given earlier. He has guidelines from the IOP Meetings department on how to organise a meeting and can decide with you the next step.

In addition, the Steering Committee would welcome hearing from you if you would be willing to give talks, either to a school audience or to undergraduate physicists. In the first instance, could you drop the Newsletter Editor a note, stating preferred audience, the topics you would like to speak on, plus a list of the areas you would be prepared to receive requests from. We would envisage the inviting institution covering travel and other subsistence costs.

Later on in the newsletter, you will find details of the meetings which have been scheduled for the next 12 months. One meeting which is still in the pipeline, is an afternoon one entitled Environmental Science Research Initiatives. The intention here would be to provide a forum to discuss the

latest initiatives in terms of both policy and research. It would therefore necessitate the involvement of bodies like the research councils and the relevant government departments. We will let you know when this meeting has been arraanged.

At its last meeting the Steering Committee considered the issue of how the Institute of Physics should respond to environmental issues. It welcomed the opportunity to assist and agreed to respond to requests as and when they arise, providing enough time was allowed and, if necessary, the IOP prvoided the necessary support facilities. Once the database of members' interests was up and running, this would be used to help prepare position papers on specific topics.

STOP PRESS: Membership of the Environmental Physics Group is nudging dangerously close to the 300 mark.

Finally: an apology for the delay in the arrival of this newsletter. The fault is entirely mine and is due to a number of factors, not leaqt of which was the brief appearance of a tropical disease and two flat-moves. Production will, I hope, be back to normal, with the appearance of the next newsletter in February 1993. All contributions are welcome.

I hope this will catch you at the beginning of the new academic year. It is evident that there is much happening in environmental matters, both in terms of research - global, regional and local - action and education. May I take this opportunity to wish you well in your endeavours, whether it be exploring our environment, searching for solutions or sharing the fascination with the researchers of tomorrow.

Susanna Lithiby

NEW COMMITTEE MEMBERS

Graham Alcock studied physics at Reading University and graduated in 1968. He completed a MSc in Meteorology and Oceanography, also at Reading, before moving to the Proudman Oceanographic Laboratory. His research interests include sea level variations, with particular emphasis on extreme conditions. He is course tutor in Oceanography for the Open University, lectures at the Dept of Maritime Civil Engineering, Liverpool University, and is a consultant to the Intergovernmental Oceanographic Commission on Global Sea Level Network.

Anne Wheldon studied physics at the University of Oxford, and took a PhD at the University of Nottingham, From 1982 to 1987 she was a lecturer in Applied Physics at the University of Swaziland, and departmental head from 1986 to 1987. During 1987 & 1988 she travelled, researching and teaching on renewable energy and environmental physics at Universities in Thailand, Australia and Fiji. In 1989 she was appointed as a lecturer in the Energy Group of the Dept of Engineering, University of Reading, where her interests include renewable energy and the environmental impact of energy conversion.

Edward Youngs graduated in physics at King's College, London in 1953. He joined the ARC Unit of Soil Physics, Cambridge in 1955, transferring to Rothamsted Experimental Station in 1977, working on the physics of soil-water movement and it applications in the fields of agriculture and hydrology. He was awarded a ScD by the University of Cambridge in 1972. When Rothamsted closed its soil physics research, he continued his research at Silsoe College, Cranfield Institute of Technology, where he is a Visiting Professor. He co-founded the British Soil-Water Physics Group and is an Advisory Editor of Agricultural Water Managemement.

NEWS FROM THE INSTITUTE

CSTI activities
The first CSTI Environmental Information paper, entitled *The Greenhouse Effect - Fact or Fiction?*, was published earlier this year. It is aimed at interested members of the public and students as well as members of the constituent bodies of the CSTI (the Council for Science and Technology Institutes). The paper draws on the expertise of the Institute of Physics, the Royal Society of Chemistry, the Institute of Biology and the Geological Society.

The leaflet has been well received by, among others, several MPs and senior managers in scientific industry. The whole document is being reprinted later this year in the members' magazine of the Institute of Food Science and Technology.

Copies can be obtained by sending an A4 SAE to the Public Affairs Department.

Joint IOP / NERC video - *Physics for a better environment*
Unfortunately the IOP has had to postpone this project, due to its inability to raise sufficient sponsorship funds. Despite what was widely regarded as a strong concept, and a well put together proposal, a year of determined fund-seeking failed to attract enough sponsors. It should be pointed out that this method is the one that has been used twice previously on the IOP's other two award-winning videos. This time, however, the recession made the task impossible. The IOP will take a decision as to whether to resume fundraising as and when the recession eases.
Should anyone have any comments or offers of support, please contact Susanna Lithiby, Public Affairs Manager at the IOP

Education Group Annual Meeting 1994
The theme for the 1994 meeting has been agreed as ***Physics in the Environment***. The EPG Education Subcommittee has been liaising closely with the programme organisers.

Physics in the Environment leaflet
The Education Department is considering producing a leaflet for schools with the above title, and several members of the Education Sub-Committee have offered to help.

FUTURE MEETINGS

Where price and registration details are not specified, these will be circulated at a later date. If information is required before, please contact the organiser.

The Physics of Plant Environments
13 May 1993 Rothamsted Experimental Station, Herts

As part of Rothamsted's 150th year celebrations, the above meeting is being organised with the Royal Meteorological Society. The meeting will comprise six invited papers and is provisionally scheduled to start at 10.30am. Confirmed speakers include Professor J L Monteith and Professor Edward Youngs.

Organiser: Dr Alastair McCartney *see address at front.*

Marine and Coastal Pollution 93 - modelling and measurement
September 1993 Warren Spring Laboratories, Stevenage

The aim of the meeting is to discuss contributions being made to this field by environmental physicists. Topics to be covered include estuarine, coastal and offshore marine regions, the modelling of processes governing the fate and transport of pollutants, measurement and instrumentation, and the varying pollutants themselves. The meeting will include invited keynote papers, submitted research papers and posters, plus the possibility of an exhibition.The meeting is likely to be relevance to higher education and research institutes, industry, the NRA, water companies and environmental consultants.

The Challenger Society, the Institute of Environmental Sciences, the Marine Measurement Forum, and the Estuarine and Coastal Science Association have all expressed an interest in cosponsoring the meeting.

Organiser: Dr Ranjeet Sokhi, Warren Springs Lab, Gunnels Wood Road, Stevenage, Herts SG1 2BX

OTHER IOP MEETINGS

Is Green Clean?
24 February Society of Chemical Industry, Belgrave Square
Organised by the Vacuum Group

The revised Montreal Protocol (1990) commits nations to cease usage of ozone depleting chemicals by the end of the century. To this end, EC regulations expected in October 1992 will demand reductions in the consumption of CFCs by 85% of the 1986 level by Jan 1994, and complete phase-out by Jan 1996. Similarly 1,1,1-trichlorethane consumption will be reduced to 50% of its 1989 level by the end of 1993 and phased out by 1995. These chemicals - or closely related ones - form the backbone of many cleaning processes for vacuum purposes. The permitted 1993 consumption levels will mean that only essential processes will be possible between 1993 and 1995. The pressure is therefore on the vacuum industry to implement new, effective cleaning processes.

Invited speakers will include an expert on the Montreal Protocol, plus representatives from the chemical and cleaning industries.

Contributions of about 15 minutes from those with an interest in the cleaning process are invited, and should be directed by 1 Dec. to Dr R J Reid, SERC Daresbury Lab, Warrington WA4 4AD; tel 0925 603260; fax 0925 603174.

Contact for registration forms: The Meetings Dept, The Institute of Physics, 47 Belgrave Square, London SW1X 8QX; tel 071 235 6111; fax 071 259 6002.

EDUCATION

Update on the Environmental Physics Group's Education Sub-Committee

Since the last newsletter the Education Sub-Committee has been actively pursuing several initiatives. This has included organising a very successful joint meeting between the Environmental Physics Group and the Environmental Mathematics Group (Institute of Mathematics and its Applications) on *Careers and research opportunities in environmental physics and mathematics* in London in April. A report on this appears later in the newsletter.

In our aim of raising the profile of Environmental Physics throughout the education sectors we have perceived the need for working groups at various educational levels. As a start, we have decided to focus on A-level Science. Developmental work in the area has been realised on a number of fronts, and we are contributing to the following curriculum initiatives:

(a) York University Science Education Group's A-level *Science in the Environment*
(b) Bath University's *Science with Technology* project
(c) The A-level Northern Modular Scheme, mediated through the Joint Matriculation Board.

We have also established a nucleus for an A-level Environmental Physics Working Group, which at present consists of members of the Environmental Physics Group's Steering Committee, Education Sub-Committee members, and university / college lecturers.

We are keen to attract contributions from interested individuals / schools / organisations in the area of Environmental Physics. These could be in the form of writing sections of the project, provding developmental ideas, including practical work, both in the laboratory and in the field, computational and instrumentation activities.

What follows is an outline of a possible A-level Environmental Physics module (ie about 50 hours class-contact time) attached. We would be pleased to hear from anyone who would wish to make comments or contribute to this important national project. Please send your comments to me at the address given earlier.

Peter Hughes
Chairman, Education SubCommittee

"A" level Environmental Physics Working Group

Proposed syllabus for an"A" level Environmental Physics module

Theme	Topics
1. General Physical Principles	Conservation of energy.Thermodynamics. Radiation Physics.EM spectra.Time-scales. Energetics : energy and the environment. Sources of energy,distribution and transmission.Energy consumption.Gas laws. Transport laws. Laws of thermodynamics. The global eco-system. Entropy.
2. The Atmosphere	Elements of meteorology - weather and climate.The sun as a major source of energy (wind,waves,etc.) Energy balance between earth and sun. Pressure-temperature variations. The general circulation. Water in the atmosphere. Weather systems. Observing and forecasting the weather. Climate and climate change. The stratosphere and the ozone layer. The ionosphere and communications.
3. The Oceans	Ocean currents.Coriolis forces.Oceans as a source of energy, and their role in the water cycle. Long waves. Sea level changes.
4. Earth Science	Elements of Geophysics.Geomagnetism. Links with Archaeology.
5. The Hydrosphere	The water cycle and budget.Comparison of water budgets over continents with those over oceans.Water quality.
6. Astronomics	The 'place' of the earth in the solar system.Sun-moon-earth relations. Tides and tidal power. Physics of the seasons. Rotational dynamics : gravitational fields and geostationary orbits.
7. Instrumentation	Methodology. Sensors and interfacing. Remote sensing.
8. Mathematical modelling	Mathematical modelling of various environmental processes (such as, transport phenomena).
9. Environmental health	Elements of risk assessment.Pollution (air,soil,water,noise).Waste and its disposal.Monitoring.Nuclear energy. Hazards.CO_2 emissions.Radioactivity. Relevancies to Medical Physics.Genetic mutations.Physics of air-borne droplets in the transmission of disease.Human-environment interactions.Building design and energy conservation.

PH 15/8/1992

MEETING REPORTS

Renewables reemerge in Edinburgh

Professor Stephen Salter from Edinburgh University headed the speakers' list for the seminar, *The Renewable Energy Contribution* which the EPG helped to organise at this year's Edinburgh International Science Festival back in April. This proved to be a very successful meeting with over 90 participants, drawn from both the public and members of the scientific community. The programme, which focussed on wind and wave energy, was inspired by the *Energy from the Environment* meeting held by the EPG last Autumn.

Among the subjects covered, Professor Salter spoke about offshore wave power, Dr Sheena McKenzie from the National Engineering Laboratory covered the options and applications of wind turbines, and Dr David Milborrow from National Wind Power Ltd, looked at commercial aspects of wind farms.

The Environmental Physics Groups joined with the IOP Scottish Branch, the Royal Society of Edinburgh and the University of Edinburgh to host this event, and there is discussion about possible collaboration for next year.

Remote sensing from space: 6 May, Rutherford Appleton Laboratory

A high quality meeting was held with some 40 - 45 people benefitting from the insight offered by the speakers into this field, including details of the latest ERS-1 findings. The Steering Committee felt the meeting warranted a higher attendance and wondered if insufficient time for publicity could have contributed.

Environmental Geophysics: 19 May , British Geological Survey, Keyworth

Organised by the Environmental and Industrial Geophysics Group of the Joint Association for Geophysics in conjunction with the Environmental Physics Group

The meeting was well attended: over 80 people registered and, including exhibitors etc, there were probably 100 present. The group included University staff and students, BGS staff, at least one from a waste disposal organisation and representatives from large and small commercial organisations.

The meeting comprised nine talks, a number of posters and an exhibition of commercial equipment by EG & G Geometrics and Earth Science Systems Ltd.

The principal theme was the investigation of landfill and waste disposal sites and the location of voids arising from old workings. Although a variety of geophysical techniques have been used and many were discussed, it was made clear that investigations needed a comprehensive approach with as much effort put into "desk study" as into the subsequent on-site investigation.

Further (petro) physical properties are important. There is a need to know about the physical deposition of materials, their compaction and alteration in situ, matrix bonding and pore fluids, and electrical current flow in prous media.

Although not discussed at length, ground penetrating radar can be a useful tool, but more experience in interpretation is needed which will need to involve fundamental studies of the propagation, refraction and reflection of the waves in the complicated environmental media.

These are areas where environmental physicists can contribute.

A full set of abstracts can be obtained from the Hon. Secretary, Dr McCartney.

Careers and research opportunities in environmental physics and mathematics

a joint meeting held by the Environmental Physics Group and the Environmental Mathematics Group on 29 April

The Environmental Physics Group was launched with the aim of promoting awareness of the contribution physics makes to our understanding of the environment. The interdisciplinary nature of the environmental sciences has the potential at times to obscure the very real part that physics plays. Hence many students remain unaware of its breadth and potential. They need to be shown that environmental physics is at the frontiers of physics and has scientific, mathematical, technological and computational implications. Such research is intellectually stimulating and is involved in many exciting developments. The meeting's aim was to provide an overview of the scope for careers and research.

The Chair, Sir James Lighthill, University College London, opened the proceedings by highlighting the acute global problems facing us today.

Professor Michael Rycroft, Cranfield, spoke on challenges for those studying the earth, atmospheric and space environment. He began with the new global view of the earth's fluid envelope, obtained using novel satellite instruments, outlining the applications of classical physics to our understanding of both natural phenomena and the effects of man on the environment. The fate of incoming solar radiation, the so-called greenhouse effect, the many physical processes that are modelled in a global circulation model and various feedback mechanisms between them were all cited.

Rycroft continued with solar-terrestrial relations, and the formation of the three-dimensional magnetosphere as an obstacle in the supersonic outflow of solar wind. Blast waves following a reconfiguration of the photospheric magnetic fields created interplanetary shocks which trigger geomagnetic storms if they encounter the magnetosphere. The polar ionosphere is connected to the outer magnetosphere via field-aligned currents; the aurora is formed at an altitude of roughly 110 km by the precipitation of energetic electrons into the upper atmosphere. Charged particles in the Earth's magnetosphere gyrate about dipolar geomagnetic field lines, bounce from hemisphere to hemisphere, and drift in longitude. Of the three adiabatic invariants associated with these motions, if wave-particle interactions occur, all breakdown progressively.

Among the many research opportunities for future environmental physicists is the ICSU Solar Terrestrial Energy Programme (STEP). This runs from 1990-1997, and together with the ESA SOHO and Cluster missions will show how some of the mass, momentum and energy flow jigsaw should be pieced together.

Dr Lesley Gray, Rutherford Appleton Laboratory, spoke about ozone depletion in the Arctic. The abundance of ozone in the stratosphere (approximately 10-50 km above the Earth's surface) is known to be decreasing not only over the Antarctic, but on a global basis, with reduction particularly evident in springtime of the Northern Hemisphere mid-latitudes. The ozone layer protects the Earth's biosphere from the photochemically powerful solar uv radiation.

The interactions between the fluid motion of the atmosphere , the transfer of radiative energy within and through the atmosphere and the multitude of photochemical reactions that influence the abundance of ozone are both complex and fascinating. The discovery of the Antarctic Ozone Hole and the subsequent research to elucidate the mechanisms responsible provides a good illustration of current research, with the role of CFCs, polar stratospheric clouds, the special nature of the meteorology of the Antarctic and possible mechanisms for global destruction of ozone all playing their part. More measurements and modelling studies of the stratosphere are vital.

Dr John Stewart, Institute of Hydrology, discussed areal evaporation from Sahelian vegetation using satellite and ground-based data. Large scale changes in vegetation cover in the Sahelian zone of West Africa may produce changes in climate. However, before any reliable forecasts can be made, fundamental data on the physical and biological processes controlling the energy balance of Sahelian vegetation are urgently required for calibrating global circulation models. To provide some of the data, the Institute of Hydrology has recently begun a collaborative project with the ICRISAT Sahelian Center called SEBEX, the Sahelian Energy Balance Experiment. The main objective is to obtain direct measurements of available energy, evaporation and sensible heat flux from contrasting Sahelian land types in order to see how they might be affected by a change in vegetation.

To use these data to calibrate climate models it will be necessary to extrapolate them to much larger areas. Hence a second objective of SEBEX is to investigate the possibility of using satellite remote sensing to estimate energy fluxes for areas of the size required for making climate forecasts on a regional scale. Physicists are needed to develop the instrumentation and models needed to interpret the data from such desertification-threatened areas.

Dr Keith Shine, Dept of Meteorology, University of Reading reflected on the challenges and issues involved in predicting future climates. For such predictions to be reliable, considerable progress is needed in at least two areas. Firstly, quantitative calculations of ***climate forcing*** - ie the mechanisms which initiate climate change - are now known to be more uncertain than previously thought, because of the effects of changes in ozone and the effects of sulphate aerosols; the latter may substantially counteract the effects of increased concentrations of greenhouse gases.

The ***climate response*** - ie how the climate changes in response to the forcing - is also a very uncertain quantity. The magnitude of the changes depends crucially on details of cloud microphysics which are not properly understood. The predictions of regional changes needs to include a complex representation of the oceans, in order that possible changes in ocean circulation can be represented . Such "coupled" ocean-atmosphere models are as yet in their infancy. Improved understanding of these challenging problems will rely on a steady supply of good graduates in the physical sciences.

Dr David Pugh, Institute of Oceanographic Sciences, spoke on science and the oceans. 70% of the Earth's surface is covered by oceans. They are vital for making our planet suitably warm and moist to sustain life. The incoming solar radiation in the tropics provides more heat than is radiated back into space. In polar regions the energy radiated into space is less than that received from the sun. This balance is sustained by a forward flux of heat from tropical regions, through both the atmophere and the ocean. The relative importance of ocean and atmosphere in this transfer has yet to be defined: the atmosphere moves more rapidly , but the slower oceans have a greater thermal capacity.

A major international World Ocean Circulation Experiment (WOCE) to study ocean behaviour is underway. The intention is to provide a basis for predicting ocean behaviour - years, decades, and perhaps centuries ahead. Such data will require data, an understanding of the underlying physical processes and the development of interactive three-dimensional models. Increases in computer power will allow us to model the whole coupled ocean-atmosphere system with adequate resolution, but that power is not yet available. Satellites and new remote sensing technology, such as acoustic tomography and autonomous submersible vehicles, can complete the picture. Management of the oceans in the 21st century will be possible only if we plan and prepare now.

Peter Hughes compiled this report with the help of the speakers

OTHER MEETINGS

World Congress for Education and Communication of Environment and Development
17 - 21 October Toronto, Canada
Contact: ECO-ED, Congress Canada, 191 Niagara St, Toronto, M5V IC9, Canada

Toward Sustainable Environmental and Resource Management Futures for Sub-Saharan Africa
2 - 6 November Accra, Ghana
Contact: Professor W Manshard, Schwarzwaldstr. 24. d-7812 Bad Krozingen, Germany; tel 49 7633 3488

Implementing BS 7750 - Environmental Management Systems
12 November Wolverhampton 24 NovemberCardiff
1 December Glasgow 8 December London

a BSI seminar presented by Hawksmere
Contact: Hawksmere Ltd, 12-18 Grosvenor Gdns, London SW1W 0DW; tel 071 824 8257; fax 071 730 4293

AGI92: 4th National Conf. of the Ass. for Geographic Information
24 - 26 November Birmingham, UK
Contact: AGI92 Conference Westrade Fairs Ltd, 28 Church St, Rickmansworth, Herts WD3 1DD; tel 0923 778311; fax 0923 776820

Scientific Symposium on the Human Dimensions of Global Environmental Change
30 November - 2 December Paris, France
Contact: Evelyne Blamont, International Science Council, Maison del'Unesco, 1 rue Miollis, 75015 Paris, France; fax 33 4 43 065 87 98

Environmental Economics in Practice
7 December London
Contact: IBC Technical Services, IBC House, Vickers Drive, Brooklands Industrial Park, Surrey KT13 0XS

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Int. Conf. on the role of Meteorology in Managing the Environment in the 1990s
Arizona, USA 26 - 28 January
Contact: Amiran Roffman, AWD Technologies, 10 Center West, Building 3 Suite 400, Pittsburgh, PA 15276, USA

9th Thematic Conference on Geologic Remote Sensing: exploration, environment and engineering
8 - 11 February California
Contact: N J Wallman, ERIM, PO Box 134001, Ann Arbor, MI 48113-4001, USA; tel 313 994 1200; fax 313 994 5123

Energy, Carbon Dioxide and Forests - ECTF Seminar
12 March Edinburgh, Scotland
Contact: ECTF Secretariat, Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian EH26 0QB, UK

International Environment 93 - Exhibition and Conference - plus Waste, Water, Recycling 93, and Analysis 93
11 - 13 May Wembley, London
Contact: Labmate Ltd, Newgate, Sandpit Lane, St Albans, Herts AL4 0BS; tel: 0727 55574; fax 0727 41694

Int. Ass. of Hydrological Sciences (IAHS) and the Int. Ass. of Meteorology and Atmospheric Physics (IAMAP)
11 - 23 July Yokohoma, Japan
Contact: Dr Takeo Kinosita, National Research Institute for Earth Science, Tennodai-3, Tsukuba, Ibaraki, 305 Japan

Int. Conf. on Environmental Pollution
28 September - 1 October Barcelona, Spain *see enclosed leaflet*

OTHER NEWS

Several publications have come my way which may be of interest or use to EPG members. Below is a selective digest, along with contact addresses.

British Library Environmental Information Resources

Science Reference and Information Service Newsletter is available free from: Marketing and Public Relations, The British Library Science Reference and Information Service, 25 Southamption Buildings, London WC2A 1AW.

The Globe

This is a free publication put out by the UK Global Environment Research (GER) Office. The GER Office is jointly funded by all research councils and is based at Polaris House, North Star Avenue, Swindon SN2 1EU; tel: 0793 411734

The following pages are culled from the August issue

Global directory of global enironmental research published
The UK Global Environmental Research Office has compiled and published the *International Directory of Global Environmental Research Initiatives, Programmes and Organisations.* By providing summaries of the key programmes, organisations and agencies, the directory aims to give an insight into the primary international effort and activities with an interest and involvement in global environmental research. Coordination of the many international programmes is also indicated. Copies of the directory can be obtained from the GER Office at the above address.

UNCED lives on
The main outcomes of the UN Conference on Environment and Development, held in June in Rio, are summarised as follows:
(1) Climate Change Convention
(2) Biological Change Convention
(3) Statement of Forest Principles
(4) the Rio Declaration
(5) Agenda 21: an action plan for the 1990s and well into the 21st Century, elaborating strategies and integrated programme measures to hold and reverse the effects of environmental degradation and to promote environmentally sound and sustainable development in all countries. Although not legally binding, Agenda 21 reflects "a global consensus and political commitment at the highest level on development and environment cooperation".
(6) mechanisms for financial assistance and technology transfer to developing countries
(7) agreement to establish a Sustainable Development Commission.

The UK delegation included 12 non-governmental members, including reps from local government, British industry, Oxfam, WWF, the TUC and Action-Aid.

Professor Iain Thornton, Director of the Global Environment Research Center, Imperial College also attended. In his opinion, the main issues were how the policy makers and politicians would react to the situation, particularly in terms of financial obligations and institutional procedures. Agenda 21 is the major agreement on environment and development and, as such has proved a focal point for British scientists. Specific chapters include " environmentally sound technology, hazardous wastes and science for sustainable development.

". . . areas such as 'strengthening the scientific basis for sustainable development', 'enhancing scientific understanding', improving long-term scientific assessment' and 'building up scientific capability' will provide a wide range of opportunities for research in the scientific institutions and in the universities far into the future . . . the UK response will require close consultation between government, the scientific community, academia, industry, local government and NGOs."

During the Summer, the Dept of the Environment hosted a debriefing meeting on the implications of the outcomes of UNCED. Much discussion centred around the UK reaction to Agenda 21. The objectives, strategies and priorities of funding agencies, institutions and programmes should all be examined in the light of Rio. It was felt that the UK had a suitable high-level mechanism to respond to these issues in the form of the Inter-Agency Committee on Global Environment Change.

Meeting on Human Dimensions of Global Environmental Change
The Globe includes a report from this meeting held by the UK GER Office in May.

LSE sets up policy overview centre
The London School of Economics has established a ***Centre for Global Governance***, the aim being to encourage coordinated responses to global problems. Each year international forums will be held for policy makers, academics and researchers to develop porposals. An annual global governance report will be compiled supported by primary research.
For further information, contact the Director of the Centre, Professor Lord Desai at LSE, Houghton St, London WC2A 2AE.

New WCRP programme on stratospheric processes
The Scientific Steering Group for the WCRP project ***Stratospheric processes and their role in climate (SPARC)*** held its first meeting in September.
SPARC has four research themes:
(1) the role of the stratosphere in climate change
(2) stratospheric process studies
(3) global change of the stratosphere
(4) stratospheric change and the penetration of US radiation

First Annual Report for GERC
Copies of the first report of the Global Environment Research Centre are available from GERC, 56 Queens Gate, London SW7 5JR

New newsletter
A copy of the first newsletter of the ESRC's Global Environmental Change Programme is available from Alister Scott, ESRC GEC Programme, Wye College, Nr Ashford, Kent TN25 5AH.

CleanLine: Keeping you in touch with clean technology

Such reads the banner headline for the August issue of the Clean Technology Unit's Newsletter. The Clean Technology Unit is a joint initiative of the AFRC

and the SERC which was launched in February of this year. As the Chairman of the Clean Technology Management Committee explains, much of current so-called environmental research these days deals with "end-of-pipe" solutions. "The emphasis needs to be more towards longer term solutions - towards inherently cleaner technologies. The interests and support of the Clean Technology programme will be concentrated in this area.

The newsletter introduces clearly and concisely the aims of the Clean Technology Programme, as well as explaining how to apply for grants. The Unit sees assisting applicants to formulate research proposals as one its mian functions. A useful summary of the clean technology opportunities within the Framework programme of the Commission of the European Communities is included.

The Unit's first three targets were at the interface between engineering and biology. The next targets under consideration are waste minimisation and the sustainable city.

For further information, contact The Clean Technology Unit, Polaris House, North Star Avenue, Swindon SN2 1ET.

Second TIGER newsletter published
TIGER, the Terrestrial Initiative in Global Environmental Research, is a research programme funded by the NERC concerned with the terrestrial environment and climate change, involving research and higher education institutes.

"The mission of the TIGER programme is to create a better understanding of the processes in the biosphere so that causes and consequences of climate change can be foreseen and forestalled. Its scientific aims concern terrestrial processes which drive the climate through exchanges of carbon, trace greenhouse gases, water and energy between the biosphere and atmosphere. TIGER is focussing on the causes and consequences of climate change at sites in Britain and in selected tropical areas and is organised within four main components:
TIGER I The carbon cycle on land
TIGER II the generation of trace greenhouse gases
TIGER III Water and energy budgets
TIGER IV The effect on ecosystems"

The TIGER newsletter is available from B G Bell & T D Murray, The Institute of Terrestrial Ecology, Edinburgh Research Station, Bush Estate, Penicuik, Midlothian EH26 0QB.

GENIE escapes
The Global Environmental Network for Information Exchange (GENIE) was launched in July to provide GER scientists with access to data on global changes. The core facility will be a metadata base (metadata are data about data) which can be accessed via JANET. GENIE is a response to the need for a facility to maximise the use of existing data.

Genie has a steering committee and two advisory panel for users and data providers and an information pack can be obtained from the Director, Ian Newman, on 0509 22687, fax 0509 211586.

1992 IPCC confirms 1990 reports
The key conclusions from the IPPC 1990 report have been upheld in the 1992 Supplementary Assessment.
The IPCC Scientific Assessment Working Group's newsletter is available from Bruce Callender, IPCC WGI Secretariat, Met Office, Hadley Climate Centre, London Rd, Bracknell, BERKS RG12 2SY; tel 0344 856615; fax 0344 856912.

Environmental Physics Group Committee

Dr Graham Alcock	Dept of Maritime Civil Engineering Liverpool University
Dr Ron Coffee	ICI & Engineering Science Dept, Oxford University
Dr Peter Dagley	Dept of Earth Science University of Liverpool
Professor John Harries	Space Science Dept Rutherford Appleton Laboratory
Mr Peter Hughes	Science Dept Kingsway College
Dr Alastair McCartney	Plant Pathology Dept Rothamsted Experimental Station
Dr Douglas Peirson	formerly Environmental and Medical Sciences Dept Harwell
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Dr John Stewart	Remote Sensing Application Section Institute of Hydrology
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